

Deorbiting Mission of cm-Sized Space Debris by Laser Ablation

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Recent years deorbiting by the laser ablation attracts increasing attentions as almost unique effective method to remediate cm-sized space debris. Ebisuzaki et al. 2014, proposed the deorbiting operation by the following three steps. In the first step, a super-wide field telescope detects the reflection signal of the solar light by a space debris and roughly determine its position and moving direction. In the second step, laser beams are ejected to the directions of a debris to determine the accurate position and velocity as well as its distance. In the final step, a high intensity laser beam is focused onto the debris surface to induce laser ablation on the surface. The reaction force of the ablation leads the debris to the deorbiting to the Earth's atmosphere. We will present an idea of a mission dedicated for the deorbit of the cm-sized space debris in a polar sun-synchronous orbit with an altitude of 600-900 km.